

In the Claims

1. (Previously presented) A system for fault-tolerant processing, comprising:
 - a processor unit;
 - computer instructions stored on a computer readable medium and operable to:
 - detect at least one of: failure of other processor units in the system, and connectivity failures that disrupt communications between the processor units;
 - evaluate connectivity condition scores (CCSs) for the processor units, wherein the processor units are operable to communicate with each other via at least two communication paths, and the CCSs are based on weighted sums of connectivity errors experienced on the communication paths during an observation period;
 - determine at least two candidate groups with the same number of at least a portion of the processor units to include in the system; and
 - select between the at least two candidate groups based on the CCSs.
2. (Original) The system of Claim 1, wherein the processor units in each candidate group are capable of communicating with the other processor units in the candidate group.
3. (Previously presented) The system of Claim 1, wherein the severity of each connectivity error is factored into a corresponding CCS.
4. (Previously presented) The system of Claim 1, wherein at least one of the CCSs is based on the history of connectivity errors on the corresponding communication path, and a decay factor is used to define how fast historic CCSs are decayed over an observation period.
5. (Previously presented) The system of Claim 1, further comprising:
 - computer instructions stored on a computer readable medium and operable to:
 - unpack a bit mask of normalized CCSs from each processor unit.

6. (Previously presented) The system of Claim 1, further comprising:
computer instructions stored on a computer readable medium and operable to:
form a bi-directional CCS for each processor unit based on normalized
CCSs; and
select between the two candidate groups to include in the system based
on the bi-directional CCSs for the processor units in each
candidate group.
7. (Currently amended) A system for fault-tolerant processing, comprising:
a processor unit configurable to communicate with other components in the
system via at least two switching fabrics; and computer instructions
stored on a computer readable medium and operable to:
maintain a connectivity condition score (CCS) for each communication
path along the at least two fabrics based on connectivity errors
experienced on the path, wherein the number of connectivity errors
during previous observation time periods are factored into a
corresponding CCS during an observation time period, the CCSs
are based on weighted sums of connectivity errors experienced on
the communication paths during an observation period, and the
CCSs are utilized to determine whether the processor unit will
continue to be included in the system.
8. (Original) The system of Claim 7, wherein the severity of each connectivity error is
factored into the corresponding CCS.
9. (Canceled)
10. (Original) The system of Claim 7, wherein the processor unit is further configured
to communicate the CCSs to at least one of the other components in the system.

11. (Previously presented) The system of Claim 7, further comprising:
computer instructions stored on a computer readable medium and operable to:
summarize each set of CCSs into a single score.
12. (Previously presented) The system of Claim 11, further comprising:
computer instructions stored on a computer readable medium and operable to:
normalize each set of CCSs based on the single score.
13. (Previously presented) The system of Claim 7, further comprising:
computer instructions stored on a computer readable medium and operable to:
transform normalized CCSs into a condensed format.
14. (Previously presented) A computer product, comprising:
data structures stored on a computer readable medium including:
a connectivity condition score (CCS) for each communication path
associated with a processor unit in a distributed processing
system, wherein the CCS indicates the connectivity condition of
the communication path during at least one observation period;
and
a connectivity matrix indicating whether the processor unit is able to
communicate with other components in the system through any of
the communication paths; and
a single score representing the sum of the CCSs for the processor unit.
15. (Canceled)
16. (Original) The computer product of Claim 14, wherein each CCS is normalized
and stored in a bit mask.
17. (Previously presented) A method for regrouping processor units in a fault-tolerant
system, comprising:

determining the ability of each processor unit to communicate with other processor units in the system;
forming at least two candidate groups with the same number of processor units that are able to communicate with each other;
generating a single score representing a sum of connectivity condition scores (CCSs) for the processor units in the at least two candidate groups, wherein the CCS indicates the connectivity condition of one communication path associated with a corresponding processor unit; and
evaluating the single score for each candidate group of the processor units.

18. (Original) The method of Claim 17, wherein the CCS is based on the number of connectivity errors experienced by the corresponding communication path.

19. (Previously presented) The method of Claim 17, wherein at least one of the CCSs is based on historical connectivity errors experienced by the corresponding communication path.

20. (Original) The method of Claim 18, wherein the severity of each connectivity error is factored into the corresponding CCS.

21. (Original) The method of Claim 18, further comprising:
forming a bi-directional CCS for each processor unit; and
selecting between the at least two candidate groups to include in the system based on the sum of the bi-directional CCSs for the processor units in each group.

22. (Original) The method of Claim 21, further comprising:
selecting an arbitrary one of the at least two candidate groups when the candidate groups have the same sum of bi-directional CCSs.

23. (Previously presented) An apparatus for regrouping processor units in a fault-tolerant system, comprising:

means for forming at least two candidate groups of processor units that are able to communicate with each other; and

means for evaluating connectivity condition scores (CCSs) for each candidate group of the processor units, wherein the number of connectivity errors during previous observation time periods are factored into a corresponding CCS during an observation time period and each CCS indicates the severity of connectivity errors experienced by one communication path associated with a corresponding processor unit; and

means for selecting an arbitrary one of the at least two candidate groups when the candidate groups have the same sum of CCSs.

24. (Previously presented) The apparatus of Claim 23, further comprising means for counting the number of connectivity errors experienced by a corresponding communication path during an observation period.

25. (Previously presented) The apparatus of Claim 23, further comprising means for factoring into the CCS connectivity errors experienced by a corresponding communication path during at least one previous observation period.

26. (Currently amended) The apparatus of Claim 23, further comprising means for selecting a candidate group based on survival priority of the processor units included in each candidate group.

27. (Previously presented) The apparatus of Claim 26, further comprising means for selecting a candidate group based on the CCSs, when both candidate groups have the highest number of at least one of the group consisting of: processor units and processor units with the highest survival priority.